Attorney's Docket No.: 0072798-000007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)	**MAIL STOP APPEAL BRIEF - PATENTS**
Todd Peterson et al.	)	
Application No.: 10/806,750	)	Group Art Unit: 2872
Filed: March 22, 2004	)	Examiner: Joshua L. Pritchett
For: USE OF LIGHT SCATTERING PARTICLES IN DESIGN, MANUFACTURE, AND QUALITY CONTROL OF SMALL VOLUME INSTRUMENTS, DEVICES, AND PROCESSES	)	

SUBSTITUTE APPEAL BRIEF UNDER 37 C.F.R. § 41.37(C)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

A Notification of Non-Compliant Appeal Brief was mailed on February 27, 2008. According to the Notification, the Appeal Brief filed February 12, 2008 is defective for failure to comply with one or more provisions of 37 C.F.R. § 41.37. More specifically, according to the Notification, the brief does not identify the claims on appeal in the status of claims section, the summary of claimed subject matter section does not identify and map all independent claims on appeal (claims 1 and 32) to the specification by page and line number and/or drawings, if any, and finally, the evidence appendix and related proceedings appendix are missing from the brief.

A Substitute Appeal Brief is being filed herewith under 37 C.F.R. § 41.37 in response to the Notification. Applicants respectfully submit that the Substitute Appeal Brief should be fully compliant under the provisions of 37 C.F.R. § 41.37.

Please note that as the Appeal fee was previously paid on February 12, 2008, the Appeal fee is not required for filing the Supplemental Appeal Brief.

Applicants submit herewith a petition for three-month extension of time extending the period of response from March 27, 2008 to June 27, 2008.

I. REAL PARTY IN INTEREST

The real party in interest in the present application is Invitrogen Corporation, by virtue of an executed Asset Purchase Agreement between Genicon Sciences Corporation and Invitrogen Corporation dated 27 June 2003.

II. RELATED APPEALS AND INTERFERENCES

To the knowledge and belief of Applicant, Assignee, and the undersigned, there are no other appeals or interferences before the Board of Appeals and Interferences that will directly affect or be affected by the Board's decision in the instant Appeal.

III. STATUS OF CLAIMS

Claims 1-8, 14-16, 18, 19, and 32-35 are pending in this application and all claims stand rejected. Claims 1-5, 7, 8, 18, 19 and 32-35 stand rejected under 35 U.S.C. §102(e); claims 14-16 stand rejected under 35 U.S.C. §103(a); and claim 6 also stands rejected under 35 U.S.C. §103(a).

IV. STATUS OF AMENDMENTS

Appellants have not amended the claims since a response to Non-Final Office Action was submitted to the USPTO on 5 December 2006.

The Claims Appendix included with this Substitute Appeal Brief sets forth the claims involved in the appeal and reflects all claim amendments entered to date.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1, the broadest claim on appeal, is directed to a method for determination of a dynamic property of a fluid volume (see, for example, page 2, lines 14-15) in a small volume device selected from the group consisting of an array chip, array plate, and array slide, (see, for example, page 3, lines 29-31) comprising determining the distribution or location or both of at least one resonance light scattering particle in said fluid volume by detecting light scattered from said at least one resonance light scattering particle (see, for example, page 2, lines 15-18), wherein said at least one resonance light scattering particle is not specifically bound to another entity (see, for example, page 2, lines 25-26 and page 6, lines 20-26).

Claim 32 is directed to a method for analyzing fluid flow in at least one portion of a small volume device (see, for example, page 6, lines 3-4) selected from the group consisting of an array chip, array plate, and array slide (see, for example, page 3, lines 29-31), comprising illuminating a suspension of resonance light scattering particles in at least one portion of said device (see, for example, page 6, lines 6-7), wherein said resonance light scattering particles are not specifically bound to another entity (see, for example, page 2, lines 25-26 and page 6, lines 20-26); and detecting the presence of said resonance light scattering particles as an indication of said fluid flow (see, for example, page 2, lines 7-8).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Appellants are appealing the rejection of claims 1-5, 7, 8, 18, 19 and 32-35 under 35 U.S.C. §102(e) as anticipated by United States Patent No. 6,180,415 ("Shultz").

2. Appellants are also appealing the rejection of claims 14-16 under 35 U.S.C. §103(a) in view of Schultz, and claim 6 under 35 U.S.C. §103(a) in view of Schultz and United States Patent No. 5,444,529 ("Tateiwa").

3. Appellants are also requesting the Board to determine if the Examiner has properly considered Appellants' arguments during the prosecution of the present Application.

VII. ARGUMENT

A. SCHULTZ DOES NOT ANTICIPATE THE CLAIMED INVENTION

1. Schultz Does Not Teach Fluids

The entire disclosure of Schultz is directed towards the use of plasmon resonance entities (PREs) to detect or provide information about an analyte. Schultz, however, does not disclose or concern itself with resonance light scattering particles to gather information about fluids. Indeed, very early in disclosure, Schultz makes it clear that its methods are directed towards gathering information regarding analytes, not fluids, when it states that "the aim of analyte diagnostic tests and methods is to detect the presence and/or amount of an analyte (the target)." *U.S. Patent No. 6,180,415,* Col. 1, ll. 18-20. Schultz thus makes it clear to the reader that "target" is synonymous with analyte and not a fluid. This understanding of Schultz is confirmed later in at least two places. First, Schultz states that the methods disclosed therein are used

> to interrogate a field for a variety of types of information, including the presence or absence of a target, spatial features of a target, the environment of a target, number and/or spatial distribution of a selected type of target binding sites, and distance relationships in the target ....

U.S. Patent No. 6,180,415, Col. 9, ll. 18-25. Second, Schultz states that "the target may be any target ... including ... a fluid sample containing a target analyte molecules ... . " *U.S. Patent No. 6,180,415,* Col, 14, ll. 49-53. The term target in these passages is used consistent with the term analyte as explicitly disclosed earlier in the patent. And the second passage clearly indicates that a fluid is not a "target," because the fluid may contain the target.

The Examiner cites one of the passages mentioned above (Col. 9, ll. 18-26) to support his assertion that Schultz teaches methods of gathering fluid dynamics information of a fluid, yet nowhere in this passage does the word fluid appear. To make this passage read on the claimed invention, one would forcibly have to substitute the word "fluid" for the word "target." Such a substitution would, however, render the passage nonsensical, and there is no clear indication anywhere in Schultz that "target" can or should be substituted for "fluid." In fact, as stated above, Schultz uses the word "fluid" very differently from the word "target."

Schultz is therefore clearly informing the reader that its disclosure is directed towards gathering information about analytes (targets) within a given environment or field.

The Examiner also points to another passage within Schultz (Col. 45, ll. 46-55) as an indication that it teaches methods of gathering information about fluid dynamics of a fluid. The Examiner, however, misinterprets the passage, and as a result draws an incorrect conclusion as to what the cited passage would teach one of skill in the art. Indeed, the passage itself states that "a blood cell [analyte] may be labeled and observed in circulation," *U.S. Patent No. 6,180,415,* Col. 45, l. 45. This first portion of the passage is clearly directed towards observing a labeled blood cell, *i.e.*, a labeled target within the circulation, where circulation can reasonably be interpreted as a fluid.

But the passage falls well short of indicating that the methods are used to gather fluid dynamics information of a fluid. Indeed, the second portion of the passage upon which the Examiner relies states that "[b]y labeling an entity of interest [analyte] with a PRE, the motion of that entity may be monitored ... . " *U.S. Patent No. 6,180,415*, Col. 45, ll. 50-51 (emphasis added). Again, the Examiner appears to be indicating that fluid dynamics can be ascertained by monitoring the movement of a labeled blood cell. The emphasis in Shultz is monitoring an analyte/target, *i.e.*, a blood cell, and does not concern itself with the fluid in which the blood cell may be present.

Also, the anticipation rejection fails to recognize that the fluid dynamic properties are to be in a "small volume device" as the claims mandate. Schultz only discloses circulation, which can not be considered a small volume, nor can it be considered a device.

2. Schultz Does Not Teach Fluid Dynamics

The Examiner also utilizes this same passage (Col. 45, ll. 46-55) to support his assertion that Schultz teaches fluid flow rate/patterns (*See* Final Office Action, page 3, line 3 and lines 11-13). Again, this passage focuses on motion of an entity and is entirely devoid of any discussion of fluids, save for a passing reference to the circulation. Furthermore, nothing in the passage or any part of the Schultz disclosure would indicate to one of skill in the art that the word "fluid" can be substituted for the word "target" or "entity." In fact, the word "flow" is used once in the entirety of Schultz and the phrase "flow rate" is never used; nor can "flow rate" be inferred from any part of the disclosure. Similarly, the phrase "fluid dynamic(s)" is never mentioned in Schultz. Thus, not only is the passage upon which the

Examiner relies silent with respect to fluid dynamics, but all of Schultz is silent with respect to fluid dynamics.

The Examiner also asserts that Schultz teaches fluid mixing by asserting that "Schultz discloses [that] the dynamic property is fluid mixing being evaluated in one or more portions of the device or through the entire device, the portions being selected from the group consisting of a mixing chamber, a port, a flow channel, a pump, a valve, and a flow channel intersection (col, 49 lines 56-65)." *Office Action of 12 January 2007*, page 3. Once again, the word fluid does not appear, and the teaching can not be substituted or inferred in the cited passage.

The cited passage focuses on cell sorting techniques (FACS) using cells that are labeled with the PREs. The passage can not and should not be interpreted as any type of teaching of fluid dynamics of a fluid. At best, the cited passage suggests the use of PREs to label cells within a pre-existing mixed population of cells. Thus, complete mixing has already occurred before the addition of PREs to the field, precluding the evaluation of fluid mixing. Indeed, the passage upon which the Examiner relies states that "[a] mixed cell population is analyzed for one cell type expressing a particular surface antigen using a particular PRE probe. In addition, several cell types are isolated by simultaneously using multiple PRE probes because of the number of uniquely identifiable PRE probes with distinct spectral signatures that can be made." *United States Patent No. 6,180,415*, col. 49, ll. 56-65. Thus, a cell sorting sample consists of a mixture of targets (cells), rather than a mixture of fluid volumes. Furthermore, the passage demonstrates that the PREs in Schultz are used to isolate analytes within a mixture, rather than determine mixing properties of a fluid. To be clear, the passage upon which the Examiner relies to teach fluid mixture is actually directed towards FACS sorting of cell. Nothing in the cited references teaches or suggests that FACS sorting techniques can be used to determine fluid dynamics. Accordingly, Schultz fails to disclose a method wherein fluid mixing is evaluated.

3. Schultz Fails to Teach Particles Not Specifically Bound to Another Entity

Shultz is limited to the use of resonance particles where the particles themselves are specifically bound to a binding partner. In every specific embodiment in Schultz, the PREs are bound to some entity, target or analyte. Nowhere does Schultz disclose measuring fluid

dynamics (or anything else) using particles that are unbound to another entity. Indeed, one of the passages upon which the Examiner relies is directed solely towards resonance particles that are specifically conjugated or bound to cells or to molecules within cells. According to Schultz, "[o]nce bound, the PRE [(plasmon resonant entity)] can be localized and its motion observed." *United States Patent No. 6,180,415,* col. 45, ll. 42-43. Thus, Shultz does not teach or suggest that the resonance particles may be unbound within a fluid. To account for this lack of teaching or even suggestion, the Examiner points to three words in Schultz as evidence that the cited reference discloses methods of utilizing unbound resonance particles. Specifically, the Examiner points to "otherwise distributed therein" as evidence that Schultz teaches the use of unbound resonance particles. Further, the Examiner admits that "this statement may not be enough to teach a specific other distribution,…. " *Final Office Action of 12 January 2007,* page 6. The Examiner, however, points to no other disclosure in Schultz to support his assertions. In fact, the Examiner can not point to any other portion of Schultz, because Schultz never discusses, suggests or contemplates the use of unbound particles.

4. Animal Cells are not The Same as Fluid

Regarding claims 8, 18, 19, 33 and 34, the Examiner alleges that "Schultz discloses the plurality of distinguishable resonance light scattering particles is used to analyze mixing of fluids from two different sources (col. 49 lines 56-65)." *Office Action of 12 January 2007*, page 4. Although Schultz never discusses the mixing of two fluids, the Examiner states that because "[a]nimal cells conform to the outline of their container" they are fluid. *Final Office Action of 12 January 2007*, page 4.

Appellants respectfully disagree and assert that Schultz does not teach one skilled in the art a method to analyze mixing of fluids from two different sources. It is well known in the art that the method of cell sorting is for the purpose of isolating cells from a pre-existing mixed population of cells. Consistent with this, Schultz states that "[a] mixed cell population is analyzed for one cell type expressing a particular surface antigen using a particular PRE probe. In addition, several cell types are isolated by simultaneously using multiple PRE probes because of the number of uniquely identifiable PRE probes with distinct spectral signatures that can be made." *United States Patent No. 6,180,415*, col. 49, ll. 56-62. Furthermore, Appellants respectfully disagree with the Examiner's assertion that "[t]he different cells disclosed in Schultz are equivalent to different fluids ... [t]he term fluid is

defined as tending to flow or conform to the outline of its container. Animal cells conform to the outline of their container due to their flexible outer membrane and mostly liquid interior." *Office Action of 12 January 2007*, page 4. Appellants contend that animal cells are not the equivalent of fluid and do not inherently conform to the outline of their container. Indeed, animal cells comprise an extensive cytoskeletal network of actin and tubulin microfilaments which impart considerable structural rigidity and regulate cell shape and morphology. Appellants assert that since different animal cell types have markedly different morphologies (spherical, *e.g.*, lymphocytes; spindle shaped, *e.g.*, fibroblasts; long and tapering, *e.g.*, non-striated muscle cells), animal cells cannot simply "conform to the outline of their container," otherwise such cell-type specific morphologies, which are well known in the art, would not exist.

Claim terms are to be given their common and ordinary meaning *(see* MPEP 2111.01). If the Examiner's definition of fluid were correct, all malleable substances and fine-particulate solids, such as table salt or talcum powder would be considered "fluid." Once again, the Examiner is improperly substituting the word "fluid" in Schultz, in this case as a substitute for animal cells, whenever necessary to maintain the improper rejection. This substitution of fluid for cells is obviously incorrect factually. Because "fluid" should not be substituted for animal cells, Schultz does not teach mixing of two or more fluids.

5. Schultz Does Not Enable the Presently Claimed Invention

The Supreme Court established long ago that "knowledge supposed to be derived from the [prior] publication must be sufficient to enable those skilled in the art or science to understand the nature and operation of the invention, and to carry it into practical use." *Seymour v. Osborne* 78 US (11 Wall) 516 at 555 (1870). Indeed, "the identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989). Further, Federal Circuit precedent makes it clear that an anticipating reference must "sufficiently describe the claimed invention to have placed the public in possession of it." *In re Donohne* 766 F.2d 531, 533 (Fed. Cir. 1985). Using this standard, Schultz does not place the public in possession of the invention, because Schultz does not enable the use of unbound RLS particles to determine fluid dynamics in small volume device. Indeed, even if one were to improperly substitute

target/analyte or entity for "fluid," and even if one were to read "otherwise distributed" as teaching unbound particles, Schultz would still fail to anticipate the claimed invention.

Specifically, Schultz does not teach how to use unbound resonance light particles to measure fluid dynamics in a small volume device. As stated previously, a passing reference to particles that are "otherwise distributed" *(United States Patent No. 6,180,415*, col. 8, ll. 40) cannot be considered a specific teaching to put the public in possession of a method of measuring fluid dynamics using unbound particles. In addition, Schultz provides no specific disclosure, let alone an enabling teaching, regarding the specific dynamic properties disclosed and claimed in the present invention. Indeed, Schultz does not disclose any teaching regarding fluid dynamics. At most, Schultz discloses monitoring cell movement within a fluid. A suggestion of monitoring cell movement, however, can not be used to teach the public how to use light scattering particles to measure fluid dynamics.

There is simply no guidance in Schultz for teaching the methods of the claimed invention. Put another way, Appellants pose the question: Would the disclosure of Schultz support, under the requirements of 35 U.S.C. §112, first paragraph, the claims presently under Appeal? Surely not. Schultz contains no working examples of determining fluid dynamics in a small volume device. Schultz provides no guidance on how to assess fluid dynamics using an unbound particle.

Appellants request reversal of the anticipation rejections.

B. SCHULTZ AND TATEIWA FAIL TO RENDER OBVIOUS THE REJECTED CLAIMS

As discussed herein, Schultz fails to teach each and every element of the claimed invention. The secondary reference, which is cited solely for the improper proposition that light source will cause fluid evaporation, fails to teach the elements missing in Schultz.

To establish *a prima facie* case of obviousness, the references must teach each and every limitation of the currently claimed invention, *In re Royka,* 490 F.2d 981, 985 (C.C.P.A. 1974). In addition, there must be a reasonable expectation of success in combining the references, and this expectation of success must also be found in the references as well. *In re Vaeck,* 947 F.2d 488, 493 (Fed. Cir. 1991). Finally, the "apparent reason to combine the known elements in a fashion claimed by the [claims] at issue ... should be made explicit." *KSR Int'l Co. v. Teleflex, Inc.* No 04-1350 slip op. at 14 (U.S. Apr. 30, 2007).

The Examiner alleges that "Schultz teaches the invention as claimed but lacks specific reference to drying." *Office Action of 12 January 2007*, page 4. As discussed above, Schultz fails to disclose each and every limitation of the presently claimed invention. The Examiner points to a passing reference within Schultz indicating that PREs may be "otherwise distributed" *(United States Patent No. 6,180,415*, col. 8, ll. 40) within a target. Further, Schultz does not teach how to measure any sort of dynamic property of a fluid. Thus, Schultz does not teach each and every limitation of the claimed invention.

The Examiner then cites Tateiwa for the proposition that "Tateiwa teaches that the light source incident upon the fluid sample will cause the fluid to evaporate, thus the fluid would dry on the surface (col. 2 lines 11-27)." *Office Action of 12 January 2007*, page 4. The Examiner then concludes that "it would have been obvious to one of ordinary skill in the art at the time the invention was made that the light source of Schultz could perform the same evaporative function as the light source in Tateiwa for the purpose of determining the surface tension of the fluid by the size and shape of the portions of fluid as the surrounding fluid evaporates." *Office Action of 12 January 2007*, pages 4-5. Appellants respectfully assert that Tateiwa fails to teach one skilled in the art that the "light source incident upon the fluid sample will cause the fluid to evaporate." *Office Action of 12 January 2007*, page 4. In fact, the statement that "incident light causes fluid to evaporate" is incorrect. It is temperature and pressure that causes liquid to evaporate, as opposed to shining a light into or onto liquid. The light in Tateiwa does not cause evaporation.

Rather, Tateiwa teaches the opposite, in that lowering of the temperature of the silicon substrate leads to condensation of water molecules around a dust particle. Upon irradiation of the silicon substrate with a laser light source, the "irregular reflection light patterns reflected therefrom are detected by the light detector." *United States Patent No. 5,444,529*; col. 2, ll. 38-51. Thus, one skilled in the art would understand Tateiwa to teach that the laser light source does not result in fluid evaporation, since evaporation would negate determination of light scattering by condensed water droplets. Thus, Tateiwa cannot be cited for the proposition that a light source must necessarily be equal to fluid evaporation. Accordingly, the combination of Schultz and Tateiwa fails to disclose each and every element of the claimed invention, and one skilled in the art could not arrive at a method for the claimed invention by combining these two references.

Furthermore, Appellants assert that the Examiner has not provided sufficient reasons as to why one of skill in the art would combine the teachings of the references. Appellants also assert that one of ordinary skill in the art would not be compelled to combine the references to arrive at the claimed invention since, at best, the two references analyze different types of light scattering produced by unrelated mechanisms. Shultz specifically discloses the interrogation of a target by the binding of entities that exhibit plasmon resonance, whereas Tateiwa discloses the detection of pre-existing dust particles by condensing water droplets on the dust particle and determining optical light scattering by the water droplets. Thus, Appellants assert that no one would combine Tateiwa and Schultz to arrive at the claimed invention, because the references do not relate to one another in their use of light. Considering the lack of relatedness of the cited references and that the Office has failed to provide sufficient basis as to why one of skill in the art would combine the references, the Appellants assert that Office fails to establish *a prima facie* case of obviousness over the cited references.

The Examiner has also rejected claims 14-16 under 35 U.S.C. §103(a) as being unpatentable over Schultz (US 6,180,415). The Examiner asserts that

> Schultz teaches the invention as claimed but lacks reference to specific volumes. Schultz does state that individual cells and groups of cells can be examined by the same device (col. 45 lines 22-49). Cells are known to have volumes within the claimed ranges. For example, white blood cells have volumes on the order of a nanoliter (nL) and red blood cells have volumes on the order of a picoliter (pL). One might examine a single cell to observe cell division (Schultz, col. 45 line 26). One might examine a larger quantity of cells to observe cells in circulation (Schultz, col. 45 line 45). Therefore the number of cells examined determines the volume of fluid in the device.

Office Action of 12 January 2007, page 5.

As a reminder, the claims are directed to methods of determining fluid dynamics within small volume devices. The claims are not directed to methods of monitoring the motion of entities containing small volumes of fluids, which is what the Examiner is asserting

in the above quotation. Appellants assert that the Examiner's arguments in the obviousness rejection demonstrate the inconsistencies in the Examiner's arguments throughout examination. Indeed, after alleging that animal cells are fluid in the anticipation rejection, the Examiner now asserts that animal cells contain fluid, i.*e.*, have volumes. Again, the animal cells in Schultz correspond to a target rather than a fluid.

Appellants request reversal of the obviousness rejections.

VIII. CLAIMS APPENDIX

See attached Claims Appendix for a copy of the claims involved in the appeal.

IX. EVIDENCE APPENDIX

See attached Evidence Appendix for copies of evidence relied upon by Appellant.

X. RELATED PROCEEDINGS APPENDIX

See attached Related Proceedings Appendix for copies of decisions identified in Section II, supra.

In the event that any additional fees are due with this submission, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date June 26, 2008

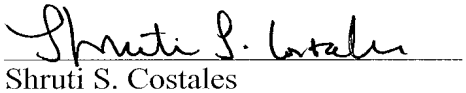
By: 
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Table of Contents

VIII. CLAIMS APPENDIX

The Appealed Claims

1. (Previously Presented) A method for determination of a dynamic property of a fluid volume in a small volume device selected from the group consisting of an array chip, array plate, and array slide, comprising determining the distribution or location or both of at least one resonance light scattering particle in said fluid volume by detecting light scattered from said at least one resonance light scattering particle, wherein said at least one resonance light scattering particle is not specifically bound to another entity.

2. (Original) The method of claim 1, wherein said dynamic property is flow rate.

3. (Original) The method of claim 1, wherein said dynamic property is particle distribution in said fluid volume.

4. (Original) The method of claim 3, wherein probes are present in said fluid volume and said particle distribution is indicative of the distribution of said probes in said fluid volume.

5. (Original) The method of claim 4, wherein said distribution of probes is on a solid phase surface.

6. (Original) The method of claim 1, wherein said dynamic property is uniformity of drying on a solid surface.

7. (Original) The method of claim 1, wherein said dynamic property is a flow pattern in a device or portion of a device, said device being an article of manufacture including one or more channels or reservoirs for fluid.

8. (Original) The method of claim 7, wherein said dynamic property is fluid mixing being evaluated in one or more portions of said device or through the entire device, said portions being selected from the group consisting of a mixing chamber, a port, a flow channel, a pump, a valve, and a flow channel intersection.

9. - 13. (Cancelled)

14. (Previously Presented) The method of claim 1, wherein said small volume device comprises a plurality of features and has deposited on each feature a volume of 10 pL to 10 nL.

15. (Previously Presented) The method of claim 1, wherein said small volume device comprises a plurality of features and has deposited on each feature a volume of 10 nL - 200nL.

16. (Previously Presented) The method of claim 1, wherein said small volume device comprises a plurality of features and has deposited on each feature a volume of 200 nL to 2 microliters.

17. (Cancelled)

18. (Previously Presented) The method of claim 1, wherein said at least one resonance light scattering particle comprises a plurality of distinguishable resonance light scattering particles.

19. (Previously Presented) The method of claim 18, wherein said plurality of distinguishable resonance light scattering particles is used to analyze mixing of fluids from two different sources.

20. - 31. (Cancelled)

32. (Previously Presented) A method for analyzing fluid flow in at least one portion of a small volume device selected from the group consisting of an array chip, array plate, and array slide, comprising illuminating a suspension of resonance light scattering particles in at least one portion of said device, wherein said resonance light scattering particles are not specifically bound to another entity; and detecting the presence of said resonance light scattering particles as an indication of said fluid flow.

33. (Previously Presented) The method of claim 32, wherein a plurality of different resonance light scattering particles are inserted in said device, and said plurality of different resonance light scattering particles are detected as an indication of said fluid flow.

34. (Original) The method of claim 32, wherein said at least one portion is a plurality of portions of said device.

35. (Previously Presented) The method of claim 32, wherein said flow is detected using extended exposure, whereby said resonance light scattering particles provide flow tracers.

IX. EVIDENCE APPENDIX

NONE

X. RELATED PROCEEDINGS APPENDIX

NONE